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Higher Education and Income Distribution in a Less Developed Country

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Three competing hypotheses have been advanced concerning the effect of government educational spending on income distribution. One hypothesis is that educational spending leads to income redistribution in favor of the poor and serves as a great equalizer of opportunity. The alternative hypothesis is that admission to the educational system is available primarily to the children of the rich, and therefore educational spending results in an even wider gap between rich and poor. Finally, there is the null hypothesis, which holds that the aggregate distribution of income is determined by many things other than education which, by this hypothesis, has little or no effect.

The purpose of this paper is to empirically test among these three hypotheses for higher (i.e., post-secondary)[1] levels of education for one less developed country, Kenya.[2] To do this,[3] we begin in Section 1 by comparing the

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[1] Regretably, no data exist to permit similar tests for lower levels of education.

[2] The Kenya data are particularly rich, especially for a less developed country. Nonetheless, many assumptions and approximations have had to be made. The reader should bear the fragmentary nature of the underlying data in mind and interpret what follows with skepticism.

[3] The methodology utilized in this study is similar in a number of respects (though different in many others) to that used by Hanson and Weisbrod in their study of California's higher education system (Benefits, Costs, and Finance of Public Higher Education, Chicago, Markham Publishing Company, 1970). An illuminating controversy on their work involving, among others, Joseph Pechman ("The Distribution Effects of Public Higher Education in California," Journal of Human Resources, Summer, 1970) has questioned the conceptual framework for evaluating th income distribution effects of a fiscal program. The present paper borrows from both without taking either side.

socio-economic status of the parents of school children with the status of the population as a whole. We will show that in comparison with all adult males in Kenya, the parents of Kenyan students fall into higher occupational categories, have had more schooling, and are more likely to own land. Taking this as prima facie evidence in favor of the proposition that the children of the relatively well-to-do receive a disproportionate share of the benefits of educatinnal system, we then seek to estimate how the educational system is financed, how much redistribution of income through the educational system takes place, and from whom to whom. In Section 2, we discuss the magnitudes of the costs and benefits of each type of higher education. Then in Section 3 we estimate the incidence of the indirect (i.e., tax) costs for each type of education by income bracket. Since actual data on the incomes of students' parents are not available, in Section 4, we construct proxy incomes based on the parents' occupation and landholdings. In Section 5, these results are used to compute the costs paid and benefits received by each income class for each type of higher education. Section 6 draws some conclusions on the effects of educational spending on the distribution of income.

1. Students' Socio-Economic Background

In Kenya, there are seven primary grades (called standards), four years of secondary and two years of higher secondary schooling (called forms), and a post-secondary system comprised of teacher training colleges and a university. Out of a total population of 10 million, in 1970 there were 1,300,000 children in primary school, 125,000 in secondary, and 10,000 in post-secondary, of whom 7,000 were in teacher training colleges and the remainder at the University

of Nairobi.[1] Thus, Kenya (like many other less developed countries) has a very steep "educational pyramid." This is important, for unlike the United States, one cannot simply decide to continue his education and do so. Rather, school admissions are highly competitive, the main criterion being performance on written examinations at the end of a course of study. Both the examinations and the curriculum reflect the legacy of colonialism and are not very different from the British educational system of today.

The Kenya government has expressed a strong commitment to equalizing the distribution of income,[2] and the educational system is seen as one of the main means of bringing this about. The government has sought to maintain an open recruitment base so that the children of the wananchi (Swahili for "the people") will be educated. In addition, the higher educational system is almost entirely subsidized and the private benefits of education are very large. For instance, university education is free (except to non-citizens) and the starting salary of a university graduate in the civil service is four times that of a secondary graduate. Consequently, the private rates of return to investment in higher levels of education in Kenya are very high -- on the order of 30% per year.[3]

These facts -- a steep educational pyramid, express public policy in favor of greater income equality, and large benefits to those few who receive higher education -- raise the question of whose children receive the rewards. To

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[1] All these pupils, except for 50,000 secondary students, attended government-operated schools.

[2] Republic of Kenya, Development Plan: 1970-1974, pp. 2-3.

[3] These figures are taken from my "Private Returns to Investment in Higher Levels of Education in Kenya," Center for Research on Economic Development, University of Michigan, Discussion Paper No. 19, April, 1972. See Table 4 below.

answer this question, I was able to make use of unpublished data on the socio-economic characteristics of the parents of university students which were already available,[1] and I supplemented these by personally gathering data from the teacher training colleges.[2] The basic findings are reported in Tables 1 - 3.

In general, as compared with all adult males in Kenya, the students' parents are more likely to be in a high-level occupation, to be better-educated, to own land, and (if landowners) to have larger landholdings. If these are taken as measures of socio-economic status, we thus observe that Kenyan students come from families with higher-than-average socio-economic status. This is true for each type of higher education. Moreover, the parents of University of Nairobi students come from an even higher socio-economic background than students at the teacher training colleges. Thus, we find that the children of the relatively well-to-do tend to benefit more from Kenya's higher education system than the children of poorer families and that this tendency is most pronounced at the University level.

If all families contributed equally to the financing of the school system, these findings would in and of themselves indicate that the educational system is financed inequitably. However, one's taxes rise with one's income so it is not clear which income groups gain and which lose from educational spending. Our task in the remaining sections is to find out.

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[1] I wish to thank S.E. Rastad for making the University data available to me. These data were compiled from personal interviews with 188 students (out of a total graduating class of 220) at the University of Nairobi in 1970. Some of Rastad's results are reported in his "University Students and the Employment Market--A Profile of Present Graduates from University College, Nairobi," Institute for Development Studies, University of Nairobi, Staff Paper No. 74, June, 1970.

[2] During May and June of 1971, I visited six of the twenty-four primary teacher training colleges (these six were selected to include one school in each of the four major tribal areas plus two smaller but important tribes) and the two secondary teacher training colleges for the purposes of administering a "Parents' Occupation Questionnaire". At some schools, I was able to administer the questionnaires at an assembly of students. At others, school officials handled the distribution and collection of them. In all, I received 1,732 useable responses from students in primary teacher training colleges and 449 from students in the secondary TTC's.

2. Magnitude of the Costs and Benefits

The magnitudes of the costs and benefits of different types of higher education and private rates of return to investment in each type are shown in Table 4. Looking first at the costs, we see that the direct costs of schooling are entirely subsidized.[1] Students receive tuition, books, room and board, a clothing allowance, and a very small cash living allowance. The government justifies these fee policies on the grounds that these people are the future leaders of the country and no able person should be discouraged on account of inability to meet the fees.

For the benefits of higher education, we take the public service salary schedule as our standard. The benefit streams shown in rows 6 - 8 are calculated on the assumptions that a person completes Form 4 at age 19 (the actual average completion age) and retires at age 55 (the compulsory civil service retirement age) and his earnings progress within his initial civil service rank but he is not promoted.[2,3]

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[1]There are some exceptions to this generalization. Foreign students at the University of Nairobi are not subsidized by the Kenyan government; however, nearly all the foreign students are Tanzanians and Ugandans who are fully-subsidized by their own governments. In addition, Kenya residents who are not citizens receive only partial, not total, subsidies. Apparently, this is a politically sensitive point and figures on the size of partial subsidies (if in fact such figures exist) were not made available to me.

[2]Two objections to the use of the civil service salary scales might be voiced First, the private sector generally pays higher wages than the public sector. And second, since only the best students (as measured by exams) are able to go on to the next level, only a portion of the additional earnings is attributable to the education itself. To the first objection, we note that nearly all Kenyans who hav completed higher education are employed by the government. The government pays teachers higher salaries than they could earn in the private schools and there ar severe shortages of trained teachers. Therefore, the graduates of the teacher training colleges have with few exceptions gone into government service. For

(continued page -5a-)

Footnote 2 continued.

university graduates, 85% have been found to be employed by government. (Source: S. E. Rastad, "Employment Categories of Kenya Graduates of the University of East Africa: An Interim Report," Institute for Development Studies, University of Nairobi, Staff Paper No. 73, May, 1970.) On the second point, two facts are important: educational attainment determines the job for which an individual is hired, and the salary is a function of the job. These facts mean that the entire civil service salary differential is the private benefit an individual could expect to receive if he is able to continue his education.

[3]No allowance is made for flunking out or dropping out ("wastage" in East African parlance) since both are rare.

3. Incidence of the Indirect Costs

As we have seen, Kenya's higher education system is funded almost entirely by the government. Consequently, in order to determine the incidence of school costs, we must look at the sources of the government's revenues.

1970/71 revenue estimates for the Government of Kenya are shown in Table 5. Duties and excises are the main sources of revenue, with income taxes nearly as great. Graduated Personal Tax (GPT) is the only other single item of any substantial magnitude. The specific revenue sources are discussed below.

Income Taxes

The income tax is administered by the East African Community.[1] The rate structure of the personal income tax is highly progressive, with marginal rates from 12.5% to 77.5% of chargeable income. (See Table 6). The personal income tax provides a single allowance of shs. 4320, married allowance of shs. 9600, and children's allowance of shs. 2400 per child up to a maximum of four. The allowances for a married man with four children are almost 20 times the per capita income. Thus, most families pay no income tax. In 1967, the last year for which data were available, fewer than 35,000 individuals were subject to income tax. This compares to total wage employment of 1,026,800 and a total population of 10,200,000 in that year. The personal income tax consequently contributes very little to national savings or to redistribution of income.[2]

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[1] The East African Community includes the countries of Kenya, Tanzania, and Uganda. Besides administering income tax collections, the Community operates such services as posts and telecommunications, railways and harbours, and power in the three countries. The Community also comprises a duty-free common market.

[2] This point is made in V.P. Diejomaoh, "Tax Mobilisation and Government Development Financing in Kenya," Institute for Development Studies, University of Nairobi, Discussion Paper No. 86, November, 1969.

The marginal company income tax rate is 40%. The system of deductions is less generous than in the U.K. and U.S. and other developing countries.[1]

Graduated Personal Tax

The rate structure of GPT is shown in Table 7. The GPT is a graduated lump sum tax, mildly regressive over low income ranges, mildly progressive over high income ranges, and strongly regressive within an income class. The bulk of the tax is collected from low income people. There are no personal allowances or deductions; gross income is the tax base.

Import Duties and Excise Taxes

The rate structure of import duties is designed to protect local industries, encourage manufacturing by having low or zero rates on inputs, and place heavy taxes on luxuries. Imports from the other countries of the East African Community are exempted from duty. The most important revenue-producing items are fuels, textiles, transport equipment, and good, drink, and tobacco.

The bulk of excise revenues were collected from beer, sugar, and cigarettes.

Incidence of Personal Taxes

Table 8 presents estimates of the incidence of taxation in Kenya. These data are derived largely from a recent study of Kenya's tax system by Westlake,[2] who analyzed household budget survey data for 1,146 African[3] households in Kenya's three main urban areas. The most noteworthy feature of Column 2 is the

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[1] Ibid

[2] M. J. Westlake, "Kenya's Extraneous and Irrational System of Personal Income Taxation" and "Kenya's Indirect Tax Structure and the Distribution of Income," Institute for Development Studies, University of Nairobi, Staff Papers No. 101 and 102, June, 1971.

[3] "African" is a racial term denoting blacks, as opposed to Asians (browns) and Europeans (whites).

regressivity of indirect taxes over the lower brackets which include the vast percentage of the African population. In Column 3, we see the regressivity of the overall tax incidence in the lower brackets. Column 5 indicates that two thirds of the personal tax burden falls on persons in the lowest income bracket.

Incidence of Indirect Education Costs

From the information in Table 8, we are able to estimate the incidence of the indirect costs of each type of higher education in the following way. We begin by assuming that each person's contribution to the financing of the educational system is equal to his total tax bill multiplied by the fraction of the government budget which is spent on education. We further assume that his contribution to each type of higher education is proportional to the importance of that type of education in the overall educational budget. The percentage of taxes paid to finance a particular type of higher education is then multiplied by the average tax bill within an income bracket to give an estimate of the tax contribution for each type of higher education by income bracket. These estimates are shown in Table 9.

To give an example of how these figures were constructed, consider the contribution of a person in the lowest income bracket to the financing of the University of Nairobi. In 1969/70, the Kenya government spent 14% of its budget on education. 15% of the educational budget was spent on university education.[1] Thus, an estimated 2.1% of a person's tax contribution went to financing the University. Persons in the lowest income bracket paid an average

[1] 6% was spent on primary teacher training colleges and 3% on secondary teacher training colleges.

of 12.5%
/of their incomes in taxes (see Column 3 of Table 8). Evaluated at the mid-point of the income bracket, we estimate this person to have paid shs. 150 in taxes. 2.1% of shs. 150 is shs. 3, the first entry in Column 3 of Table 9. The remaining figures were constructed in a similar manner.

Compared with the private benefits from higher education and the earnings foregone while in school (cf. Table 4), these tax costs are trivial. Clearly, the families whose children receive higher education are subsidized by the other families whose children are not educated at this level. Thus, there is substantial horizontal inequity in the existing system of financing of higher education in Kenya.

4. Approximation of Students' Families' Incomes

Having estimated the tax costs of Kenya's higher education system, we now seek to determine the number of students in each income category receiving each type of education, then add foregone earnings to indirect costs to derive total costs, and finally compare these to the present value of the benefits accruing to the educated individuals over their working lives. We will do this in Section 5, but first, it is necessary to approximate the incomes of students' families based on the socio-economic data available to us.[1]

It should be noted at the outset that Kenya is mainly an agricultural country. Only 627,000 of its more than ten million people are employed in the "modern sector." Furthermore, few persons sever their ties with agriculture, and there is a constant flow of workers back and forth from the cities and towns to the farms. For this reason, we must approximate both farm and non-farm income in determining a student's family's total income.

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[1]Additional details regarding the procedures by which these approximations were made are available from the author upon request.

Farm Income

Farm income has two components: land income and cattle income. The land income of the i'th farm (L_i) is defined as:

$$(1) \quad L_i = \sum_j A_i \; f_{ij} \; V_{ij} \,,$$

where A_i = acreage of farm i,

f_{ij} = fraction of i's acreage devoted to production of crop j,

and V_{ij} = value added per acre of crop j on farm i.

For empirical implementation, the definition of land income must be modified in a number of ways. In a pre-test of the survey questions, it was apparent that students did not know what fraction of their fathers' land was under cultivation or how many acres were allocated to each crop. Consequently, it became necessary to assume (a) that the average fraction of land under cultivation on all Kenyan farms applied to each individual farm, and (b) that the land under cultivation was divided equally among the crops grown. In addition, it was not possible to estimate farm-specific or region-specific value added per acre of crop. Rather, the value added per acre of crop j was the average figure for all farms in the country growing that crop. Thus, for empirical estimation, the land income of the i'th farm is taken to be

$$(2) \quad L_i = \sum_j A_i \; f_j V_j = c \sum_j \left(\frac{A_i}{J_i} \; V_j\right),$$

where c = average fraction of land under cultivation on all Kenyan farms,

A_i = acreage of farm i,

J_i = number of crops grown on the i'th farm,

and V_j = value added per acre of j for all Kenyan farms.

Farm-specific figures in (2) are derived from students' answers to the following survey questions: "Does your father own any land? If 'yes' how many acres does he own? Does your father (or your mother) grow any crops to sell for money? If 'yes' which crops?" The crops listed as alternatives were coffee, tea, pyrethrum, cotton, and other. Figures for all Kenyan farms were derived from a small farm survey conducted by the Ministry of Agriculture[1] covering 1,154 farms.

The average fraction of land under cultivation for crops to be sold for cash was 47%. The average value added per acre planted was shs. 185 per year for both coffee and tea, 130 for pyrethrum, 162 for cotton, and 146 for other.[2]

The other component of farm income is the income attributable to cattle ownership. The cattle income of the i'th farm is the number of grade cows (G_i) multiplied by the value added per grade cow in the country as a whole (V_G) plus the number of non-grade cows (N_i) multiplied by the value added per non-grade cow (V_N). The value added per grade and non-grade cow were calculated from the Ministry of Agriculture's small farm survey and were found to be shs. 239 per year and shs. 34 per year respectively. Data on the i'th farm's cattle ownership were taken from the student's response on the Parents'

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[1] Jerome Wolgin of Yale is using this data for a doctoral dissertation now in progress. I am grateful to him for making the value added figures available to me.

[2] I used the data from the individual farms to test whether there were significant scale effects. Regressing value added per acre of crop j on the number of acres of that crop in both the linear and double-logarithmic form, I found that the regression coefficients and coefficient of determination were in all cases insignificantly different from zero. In light of this, the use of a single value added per acre figure regardless of farm size would appear justified.

Occupation Questionnaire to the question: "Does your father own any cattle" If 'yes'; how many non-grade (local) cattle does he own? If 'yes': how many grade (exotic) cattle does he own?"

To give an example, suppose a student reported that his father owns three acres of land on which he grows coffee and pyrethrum, and that he also owns one grade cow and four non-grade cows. His land income would be estimated as

$$.47 \times ((1\ 1/2 \times 185) + (1\ 1/2 \times 130))$$

or shs. 222 per year, his cattle income as 239 + (4 x 34) or shs. 375 per year, and his total farm income as shs. 599.

Non-farm Income

To determine the non-farm income of parents, students were asked: "What kinds of work does your father (or guardian) do and who does he work for? Write down all the kinds of work he does and describe them as clearly as you can." If more than one kind of work was reported, it was assumed that the father's time was divided equally among the different kinds. The responses were coded to conform with official government job categories.

Data on monthly cash remuneration for each job category are collected on a firm-by-firm basis by the Ministry of Finance and Economic Planning.[1] Unpublished summary tabulations by one-digit industrial classification were made

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[1]These data are collected from an "Enumeration of Employees, Self-Employed Persons and Directors." A report is required of any establishment including farms which had paid employees or directors or which were operated by self-employed persons as of 30th June, 1970, and failure to submit a report is punishable by law.

available to me by the Ministry for purposes of this study. For each job category, I took the average monthly cash remuneration in each industry, weighted each by the number of employees in that job category in that industry, and thereby constructed a weighted average of monthly cash remuneration in each job category for the country as a whole. These figures are reported in Table 10. The student's description of his parent's work was then matched with the average earnings in the occupational category to determine a proxy non-farm income.[1]

Total Income

The total income of an individual student's family was estimated as the sum of the farm and non-farm income derived in the manner described above. Frequency distributions of total estimated income for the students in each type of higher education and all Kenyan taxpayers are presented in Table 11. These data reveal three outstanding features:

(1) The students in Kenya's higher education system come from families with clearly higher incomes on average than Kenya's population as a whole.

(2) University students come from higher income families than students in the teacher training colleges.

(3) However, the majority of the students come from families which could not by any standard be considered "the elite." (cf. Tables 1-3).

In the remaining sections, we relate the incidence of benefits to the incidence of costs and remark on the distributional effects of Kenya's higher education system.

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[1]This procedure, although the best possible, is far from ideal. Many things other than occupation determine earnings. (See George E. Johnson, "An Empirical Model of the Structure of Wages in Urban Kenya," Department of Economics, University of Michigan, June, 1972, mimeo.) However, national data on the correlates of earnings are not available, so it was impossible to make any further refinements.

5. Incidence of Total Costs Paid and Benefits Received by Income Class

As noted earlier, the vast majority of students in higher education work for government upon completion of their studies and are paid according to a fixed government salary scale. It seems reasonable therefore to assume that each recipient of higher education receives the same monetary benefit as any other. Thus, the distribution of students by income class also is the distribution of the benefits of higher education.

We have also seen that Kenya's higher education system is funded almost entirely by government. On the assumption that a person's contribution to a given fiscal program is equal to his total tax contribution multiplied by the ratio of spending on the fiscal program in question to total government spending, the percentage of all taxes paid by persons in each income bracket also is the distribution of direct costs of higher education.

The distributions of benefits, direct costs, and taxpayers by income class are shown in Table 12.[1] We find:

(1) Low and high income families each pay a larger share of the costs of the University of Nairobi than their respective fractions of the benefits; the reverse holds for middle income people.

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[1]The costs in Table 12 include only tax costs and not foregone earnings. The reason for this omission is that tax costs are negligible in size relative to foregone earnings (cf. Tables 4 and 9). Since the distribution of foregone earnings by income class is the same as the distribution of benefits by income class, there would be virtually no difference between the distribution of benefits and the distribution of total costs if foregone earnings were included. While foregone earnings clearly need to be taken into account by the individual in assessing his income gains, it is not obvious that they should also be included when assessing the income distribution consequences of a fiscal program which affects groups of individuals.

(2) For the teacher training colleges, the lower and middle income people each receive a larger fraction of the benefits than their respective shares of the costs; as with the University, high income people receive a smaller fraction of the benefits than their share of the costs.

(3) Low income people pay a smaller percentage of the costs relative to their numbers in the population; middle and upper income people pay more.

(4) Relative to their numbers in the population, children of low income families are underrepresented in the higher education system, middle and high income children overrepresented.

In the final section, we seek to interpret these and other findings of the paper.

6. Conclusions

In this paper, we have examined Kenya's higher education system with the goal of testing among three alternative hypotheses: that the higher education system redistributes income from rich to poor, that it redistributes income from poor to rich, or that it has no important effect on the distribution of income. The evidence is in some respects consistent with all three, yet appears to support the second most strongly.

In support of the rich-to-poor hypothesis, we find that families in the highest one percent of the income distribution pay over 15% of the tax costs of higher education, yet receive only five to ten percent of the benefits. Consistent with the no-effect hypothesis is the finding that each taxpayer pays only a small amount in taxes to support the higher education system and

hence in aggregate terms very little redistribution of income is possible. Also consistent with this hypothesis is that there is something akin to vertical equity in the financing of the higher education system. The lowest income group pays a somewhat larger percentage of the direct costs of the University of Nairobi than it receives in benefits, but the reverse is true for the teacher training colleges.

Two findings favor the hypothesis that the higher education system redistributes income from poor to rich. The first is that the main inequity in Kenya's higher education system, though this is by no means unique to that particular country, is horizontal. A select few receive a very large payoff and if they were not relatively rich when they started their higher education, they will be relatively rich when they complete it. While the amounts involved on a person by person basis are very small on the tax side, they are very substantial per person on the benefit side. In short, the masses pay for the higher education of a select few. Secondly, the few who are so favored are disproportionately the children of the relatively well-to-do. Sixty percent of the students at the University of Nairobi are in the lowest income brackets, but this bracket includes ninety percent of the taxpayers.

At first glance, it might appear that it is the higher education system which is responsible, but this does not seem to be the case. Rather, the cause seems to be adverse selection at the primary and secondary levels. Although the costs of schooling at these levels are heavily subsidized (about 80%), pupils themselves must pay the remaining 20%. This is a large and often overwhelming burden for many families, and as a result, many children are simply

unable to attend. Even if they are able to get together the fees, poor families frequently find that they cannot forego their children's labor in planting and harvest seasons, For such families, the quality of the education received undoubtedly suffers. And since admission to the higher education system is conditional on succeeding on examinations at earlier levels, there is a systematic process operating against the poor.

The policy conclusion which follows from these findings is straightforward. Both the horizontal inequity at the higher education levels and the adverse selection at the lower levels could be lessened by charging students the full costs of their education to be repaid over their working lives[1] and using the proceeds to provide selective subsidies for the primary and secondary education of the children of the poor. Elsewhere,[2] I have estimated that this would permit virtually universal primary education under present financial arrangements or permit the abolition of fees of all those now attending. In this way, Kenya's higher educational system could contribute more to achieving "a fundmanetal objective of the Government ... a just distribution of the national income."[3]

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[1]Details of such a scheme may be found in my "Private Returns to Investment in Higher Levels of Education in Kenya," op. cit.

[2]Ibid.

[3]Republic of Kenya, Development Plan: 1970-1974, pp. 2-3.

Table 1. OCCUPATIONAL DISTRIBUTION OF FATHERS OF HIGHER EDUCATION STUDENTS AND ALL ADULT MALES IN KENYA

Occupational Category	Primary TTC's (1)	Secondary TTC's (2)	University of Nairobi (3)	All Adult Males in Kenya (4)
High and Middle Level Manpower[a]	23%	19%	35%	3%
Entrepreneurs, traders, and businessmen[b]	9%	9%	20%	---
Small scale farmers	54%	60%	44%	66%
Unskilled and traditional	14%	12%	1%	31%

a) Includes professional, administrative, and managerial, teachers, armed forces and police, clerical, skilled and semi-skilled artisans, and large scale farmers. As defined by the 1967 Manpower Survey, a large scale farmer is one who employs fourteen or more laborers.

b) This comprises a mixed group, ranging from high-level modern sector to low-level traditional sector and cannot be allocated to either category.

Source of Column 4:
Calculated from data in Dharam P. Ghai, "Employment Performance, Prospects and Policies in Kenya", to be published in proceedings of the 1970 Cambridge Conference on "Employment Opportunities in the Seventies", and Republic of Kenya, 1970 Statistical Abstract, p. 176.

Table 2. EDUCATIONAL ATTAINMENT OF FATHERS OF HIGHER EDUCATION STUDENTS AND ALL AFRICAN MALES, AGED 40 and OVER, IN KENYA

Educational Attainment	Primary TTC's (1)	Secondary TTC's (2)	University of Nairobi (3)	All African Males Aged 40 and Over in Kenya (4)
None	49%	48%	21%	80%
At Least some Primary	44%	48%	56%	18%
Secondary or beyond	7%	5%	22%	2%

Source of column 4: Republic of Kenya, 1970 Statistical Abstract, pp. 16-17.

Table 3. LAND OWNERSHIP OF FATHERS OF HIGHER EDUCATION STUDENTS AND LANDOWNERS IN FIFTEEN DISTRICTS IN KENYA

Land Ownership	Primary TTC's (1)	Secondary TTC's (2)	University of Nairobi (3)	Percentage of Landholdings (4)
Yes	87%	87%	73%	72%[b]
No	13%	13%	27%	28%[b]
Acreage				
0.1-4.9	34%	32%	15%	52%[c]
5.0-24.9	56%	56%	50% [a]	41%[c]
25.0 and over	10%	12%	38%[a]	7%[c]

a) Approximate

b) These figures were obtained in the following manner. According to the 1969 Population Census, there were 2,172,000 African males aged 20 and over out of a total African population of 10,733,200. Thus, the proportion of potential landowners to the total population is just over 20%. The 15 districts for which size distribution of farms was available from the 1969 small farms census had a population in 1969 of 5,927,000. Applying the 20% proportion, there would thus be 1,085,400 potential landholders. There were 777,000 landholdings in these districts, or 72% of the adult males.

c) Source: Republic of Kenya, 1970 Statistical Abstract, p. 81.

Table 4. Costs, Benefits, and Private Returns to Different Types of Educational Investment in Kenya, 1971. (1 Kenya Shilling = U.S. $.14 in 1971.)

		Educational Attainment[a]		
	Average Annual Cost	Primary TTC's (1)	Secondary TTC's (2)	University of Nairobi (3)
(1)	Social[b]	Shs. 3,140	Shs. 5,600	Shs. 17,740
(2)	Direct Private	0	0	0
(3)	Foregone Earnings (undiscounted)	18,160	27,600	47,100
(4)	Total Direct Subsidy after Form 4[c]	6,280	16,800	55,600
(5)	Starting Public Service Salary (Annual)[d]	8,940	14,040	24,240
(6)	Private Benefits over Form 4[e] r = 0%	302,820	549,660	771,880
(7)	r = 5%	99,852	192,184	277,182
(8)	r = 10%	37,626	82,882	120,818
(9)	Private Internal Rate of Return over Form 4[f]	28%	33%	31%

a) These educational attainments have the following meaning. The six years of secondary schooling are known as "forms." A student who completes Form 4 is recognized as having finished secondary school. The figures for primary school teachers are for the highest grade teacher (P1), one who completes two years of primary teacher training after Form 4. Likewise, the figures for secondary teachers are for the highest grade secondary teacher (S1), one who has completed three years of secondary teacher training after Form 4. The University course requires two years of higher secondary education plus three years of university.

b) Average annual social cost = (recurrent expenditures + amortization of current development expenditures + depreciation on existing capital stock) divided by number of pupils.
Source of Row (1):
Gary S. Fields, "Private Returns to Investment in Higher Levels of Education in Kenya", op. cit., Table 3.

Table 4 continued

c) Total direct subsidy after Form 4 = (Average annual social cost less direct private cost) X number of years required to attain that education level.

d) Source of Row (5): Ndegwa Commission.

e) Constructed on the (unlikely) assumption that a Form 4 graduate would be fully-employed at the government salary scale.

f) Source of Row (9): Gary S. Fields, "Private Returns to Investment in Higher Levels of Education in Kenya," op. cit., Table 4.

Table 5. Government of Kenya, Revenue Summary, 1970/71 Estimates, in Millions of Shillings

Import Duty	468	
Excises	270	
Export Duty	10	
Total Duties and Excises		748
Income Tax		625
Graduated Personal Tax (GPT)		
Other than Municipal Areas	48	
Receipt from transfer by Nairobi City Council and Mombasa Municipality of 50% of GPT Collections[a]	36	
Total GPT		84
All Other		342
Total		1799
+Extra Exchequer Receipts		75
Grand Total		1874

a) The decision was made on 1/1/71 to no longer take 50% of the GPT collections from the Nairobi City Council and the Mombasa Municipal Council, so this revenue source no longer exists.

Source: Republic of Kenya, 1970/71 Estimates of Revenue of the Republic of Kenya for the Year Ending 30th June, 1971.

Table 6. Personal Income Tax Rates and Collections, Year of Income 1967

Chargeable Income	Marginal Rate	Average Rate		Number of Taxpayers in that Bracket	Net Tax Payable by Taxpayers in that Bracket	% of Total
First shs. 20,000	12.5%	shs. 20,000	12.5	11,131	shs 5,749,960	3%
Next 20,000	27.5	40,000	20.0	9,711	12,622,840	7
Next 20,000	37.5	60,000	25.8	7,145	25,507,460	14
Next 20,000	47.5	80,000	31.3	3,570	30,038,320	16
Next 20,000	52.5	100,000	35.5	1,524	23,735,080	13
Next 20,000	57.5	120,000	39.2	689	17,164,260	9
Next 20,000	62.5	140,000	42.5	374	13,130,540	7
Next 60,000	67.5	160,000	45.6	369	20,346,840	11
Next 100,000	72.5	180,000	48.1			
Every sh. over 300,000	77.5	200,000	50.0	143	17,970,220	10
		220,000	52.0			
		300,000	57.5			
Total				34,656	shs.186,284,520[a]	100%

[a]This total corrects an error in the published statistics

Sources: East African Income Tax Department, Report for the Period 1st July 1968 to 30th June 1969, and V.P. Diejomaoh, op. cit.

Table 7. Rate Structure and Incidence of the Graduated Personal Tax (GPT), 1970

Income Bracket shs./yr.	GPT Bracket shs./yr.	Average Rate at Midpoint of Bracket	Average % liability[a] at upper and lower ends of Bracket	Number[b] of Taxpayers in that Bracket	% of Taxpayers in that Bracket	GPT Paid by Taxpayers in that Bracket as % of Total
0 - 960	0	0 %	0%	---	---	---
960 - 1,920	48	3.3	5.00-2.5	238,899	86.5%	65.8%
1,920 - 2,880	92	3.0	3.75-2.5	22,085	8.0	11.7
2,880 - 4,080	108	3.1	3.75-2.64	6,504	2.4	4.0
4,080 - 6,240	156	3.0	3.82-2.5	2,734	1.0	2.4
6,240 - 8,400	240	3.2	3.85-2.85	1,494	0.5	2.1
8,400 -10,320	360	3.8	4.29-3.48	903	0.3	1.9
10,320 -12,000	480	4.3	4.65-4.0	585	0.2	1.6
12,000 and over	600	---	5% and lower	3,070	1.1	10.6
Total				276,274	100.0%	100.1%[c]

[a]Source: V.P. Diejomaoh, op. cit.

[b]Unpublished figures for 40 districts or sub-districts of Kenya. Source: Ministry of Finance and Economic Planning

[c]Total does not add to 100.0% due to rounding.

Table 8. Incidence of Taxes in Kenya, 1970

Income Bracket (shs./yr.) (1)	% of Income Taken by Indirect Taxation (2)	% of Income Taken by All Taxes (3)	% of Taxpayers in that Bracket (4)	% of Taxes Paid by Taxpayers in that Bracket (5)
0 - 2,400	8.7%	12.5%	90.5%	67.9%
2,400 - 3,600	7.3	10.9	5.4	8.8
3,600 - 4,800	5.4	8.1	1.3	2.2
4,800 - 6,000	4.6	7.6	0.7	1.4
6,000 - 8,400	4.8	8.2	0.5	1.5
8,400 - 12,000	5.9	9.5	0.5	2.4
12,000 - 16,800	4.5	8.8		
16,800 - 24,000	5.5	9.0	1.1	15.7
over 24,000	4.4	11.9		
			100.0%	99.9%

Sources of Columns 2 and 3: M.J. Westlake, "Kenya's Indirect Tax Structure and the Distribution of Income," op. cit. p. 10.

Columns 4 and 5 are calculated from data in this section.

Table 9. Annual Tax Contribution per Family for Each Type of Higher Education in Kenya by Income Bracket, 1970

Income Bracket (shs./yr.)	Primary TTC's (1)	Secondary TTC's (2)	University of Nairobi (3)
0 - 2,400	shs. 0	shs. 1	shs. 3
2,400 - 3,600	1	2	6
3,600 - 4,800	2	3	8
4,800 - 6,000	2	4	11
6,000 - 8,400	3	6	15
8,400 - 12,000	5	10	21
12,000 - 16,800	6	11	30
16,800 - 24,000	8	16	43
over 24,000[a]	12	24	63

[a]Evaluated at shs. 30,000

Table 10. Average Monthly Cash Remuneration in Kenya by Job Category as of 30th June 1970

Job Category	Average Monthly Cash Remuneration
Directors and Top Level Administrators	2,187
Professional	1,886
Executive and Managerial	2,025
Technicians, Works Managers, Workshop Foremen and other Supervisory Personnel	1,130
Teachers	470
Secretaries, Stenographers and Typists	1,024
Clerks	612
Bookkeepers, Cashiers and Bookkeeping Clerks	965
Operators of Office Machines	709
Technical Sales Representatives and Brokers	1,165
Shop Assistants	383
Skilled and Semi-skilled, not included above	369
Unskilled Laborers	156

Table 11. Distribution by Income of Students' Parents and All Kenyan Taxpayers[a]

Income Bracket (shs./yr.)	Primary TTC's	Secondary TTC's	University of Nairobi	Taxpayers in Kenya[b]
0 - 2,400	70.7% (1222)	74.7% (336)	60.2% (138)	90.5%
2,400 - 3,600	3.8 (66)	4.0 (18)	2.2 (5)	5.4
3,600 - 4,800	6.2 (108)	4.9 (22)	2.2 (5)	1.3
4,800 - 6,000	5.6 (97)	4.4 (20)	11.8 (27)	0.7
6,000 - 8,400	6.2 (107)	4.7 (21)	11.8 (27)	0.5
8,400 - 12,000	1.9 (33)	1.8 (8)	2.2 (5)	0.5
12,000 - 16,800	3.4 (58)	0.9 (4)		
16,800 - 24,000	0.8 (14)	2.2 (10)	9.6 (22)	1.1
over 24,000	1.4 (24)	2.4 (11)		
Total	100.0% (1729)	100.0% (450)	100.0% (229)	100.0%

[a]Number of students given in parentheses

[b]This is the same as Column (4) of Table 8.

Table 12. Distributions of Benefits, Direct Costs, and Taxpayers in Kenya by Income Class

Income Bracket (shs./yr.)	% of Benefits			% of Direct Costs	% of Taxpayers
	Primary TTC's	Secondary TTC's	University of Nairobi		
0 - 2,400	70.7%	74.7%	60.2%	67.9%	90.5%
2,400 - 12,000	23.7%	19.8%	30.2%	14.4%	8.4%
over 12,000	5.6%	5.5%	9.6%	15.7%	1.1%